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ABSTRACT

The procedures by which children from lower and middle class backgrounds attempt to obtain rewarding outcomes from each other were observed under semicontrolled conditions. Ten male and 9 female dyads, each composed of 1 middle class and 1 lower class preschool child, were required to complete 12 simple block puzzles in which each was given some of the pieces his partner needed. Rewards were given for cooperative or competitive performance. "S"s in the two socioeconomic groups demonstrated similar behavioral repertoires. Their behavior usually involved the physical manipulation of puzzle pieces, rather than attempts to influence their partners. About 3/4 of all observed interpersonal acts could be categorized into taking, delivering, and demanding puzzle parts. Middle class "S"s were more successful in general, but their demands were complied with less than were those of lower class "S"s. When competitive conditions were first, "S"s emitted more acts in both payoff conditions than when cooperation was first. This effect was strongest among lower class girls, possibly because of dominance of female models in the lower class home environment. A followup study on 2 very low performing lower class subjects revealed that their responsiveness increased greatly when paired with familiar lower class partners in their own preschool environment. (Author)

INFLUENCE TECHNIQUES IN DYADS COMPOSED OF INTERDEPENDENT MIDDLE AND LOWER CLASS PRESCHOOL CHILDREN

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Psychologists recently have shown increasing interest in the phenomenon of cultural deprivation and in the related problems of the social, emotional, and cognitive development of children from extremely low income families. Much of this interest is based upon the assumption that children from these families are in some way different from their middle class counterparts. Many studies have discovered differences in I.Q., level of conceptual ability, and other facets of the mental functioning of these children (see, for example, Eisenberg & Conners, 1966; Siegel, Anderson, & Shapiro, 1966; and Waller & Conners, 1966). Few studies, however, have attempted to compare directly potentially significant aspects of the overt behavior of lower class children with those of middle class children.

Given the increasing upward mobility of lower socioeconomic groups and the trend toward more integrated schools, it is especially important that children from lower income families be capable of competing effectively with middle class peers. Of particular interest are children in Project Head Start and similar poverty-related preschool programs in which relatively strict criteria for admission make the group socioeconomically homogeneous. The present study was designed to compare the

behavorial techniques used by middle and lower class preschool children in situations which required them to cooperate or compete with each other in order to obtain rewards.

The major independent variable was socioeconomic class of the subject (S). Sex of S, task payoff designed to encourage cooperative or competitive problem solving, and order of receiving the payoff conditions (cooperative-competitive and competitive-cooperative) were cross-classified as independent variables in the expectation that they might qualify the effects of social class.

A follow-up study also was performed on two dyads in which the lower class members had exhibited extremely low rates of performance (few task-relevant responses) in order to determine whether the lower class members were generally unresponsive or whether they were failing to respond to middle class peers in particular. In an earlier study it was found that response deficiencies of Head Start children in middle class teaching situations tended to be much greater in initial sessions than in repeated exposures (Horowitz & Rosenfeld, 1966). The current follow-up study also included a condition which tested the validity of this explanation of the observed response deficiencies of the lower class members of the dyads.

Method

Subjects

Ss were drawn from three nursery school populations. Middle class (MC) Ss came from the afternoon session of the University of Kansas Preschool. These children come predominantly from the

homes of faculty members, and a majority of them have had one year of previous preschool experience. They attend their preschool three hours per day, four days per week. Lower class (LC) Ss were selected from two Lawrence, Kansas nursery schools, here labeled NS-1 and NS-2. NS-1 is supported by Project Head Start, and is attended solely by children from families whose annual income does not exceed $3,000. Children attended NS-1 seven hours per day, five days per week. NS-2 was supported by community funds when this study was conducted. Approximately 10% of the population in NS-2 come from families whose annual income exceeds $3,000. However, only Ss whose family income is less than $3,000 were used in the experiment. Each child in NS-2 attended school three hours per day, two days per week.

On the basis of their performance on the pretest described below under "familiarization session," 19 dyads were formed, each containing one member of each socioeconomic group. Ten of the dyads were composed of male Ss, and nine of female Ss. The average age, age range, and ethnic class memberships of the Ss in each population are given in Table 1.

Table 1 about here

Experimental Setting

The experimental setting was designed to maximize two conditions. First, the setting had to permit a range of behaviors resembling that found in the school environment. Second, the setting had to permit reliable observation of those behaviors. A semistructured experimental approach was devised which kept constant such environmental

features as room, experimental personnel, and task. Within this constant setting, however, the behavior of the Ss was relatively unrestricted.

Puzzle Task

The puzzle-making task required each S to complete 12 successive puzzles. Each puzzle consisted of an 8"x10" sheet of cardboard, upon which was pasted a design composed of four adjacent paper geometric forms. The forms used were squares, parallelograms, and triangles. The squares were either red or green, triangles were blue or yellow, and parallelograms were yellow, blue, orange, or purple. The geometric forms matched the shapes and colors of Playschool Parquetry Blocks.

On each of the 12 trials, each S was given a puzzle card and four blocks and was instructed to place blocks on his puzzle card, matching both color and shape. Subjects received indentical puzzle cards per trial; however, two of the blocks given to each S were needed by the other S to complete his puzzle. Thus, it was necessary for the Ss to exchange blocks in order to complete their puzzles. All Ss received the puzzle cards in the same random order.

Payoff Conditions

Each pair of Ss was tested under both cooperative and competitive payoff conditions. The cooperative condition required both Ss to complete their puzzles correctly prior to the sounding of a buzzer in order to receive plastic trinkets. To reinforce verbal instructions to this effect, the buzzer was activated such that all Ss won the first cooperative trial and lost the second. The outcome of the next four trials was determined by the Ss' performance on those trials, as the buzzer was activated by a timer set to the mean

of the times required by the Ss to complete their puzzles on the second cooperative trial. Under the competitive condition only the S who finished first on each trial was rewarded. Ten dyads received the cooperative condition first and nine received the competitive condition first. Assignment of dyads to the two orders of conditions was random. All Ss were given a small toy at the end of the experimental session.

Procedure

Familiarization Task. All Ss who met the economic criterion and who were approximately 4 to 5 years of age were given a pretest which determined whether or not they were able to master the puzzle task. To minimize the potentially detrimental effect of an unfamiliar setting, as well as to familiarize the Ss with the research staff, the pretests were conducted in the buildings where the Ss normally attended school. Pairs of Ss within each nursery school population were tested on a series of six puzzles similar to those to be used in the subsequent testing situation. The pretest puzzles represented a series of tasks of increasing difficulty. The first pretest puzzle required only that each S place one red and one green square block on his matching puzzle card. The last two pretest puzzles were of the same order of difficulty as the puzzles of the experimental task. Subjects who could not be induced to play the game were eliminated from the sample. All MC Ss mastered the tasks. Two children from NS-1 and one from NS-2 did not.

The pretest also served as an opportunity to teach the Ss the rudiments of the puzzle game. The Ss were taught that their blocks

had to be placed on the parts of the puzzle corresponding to them in color and shape in order to be rewarded. They also were shown that the other S had some of the blocks that they needed. Great care was taken not to influence the specific methods by which Ss obtained the blocks they needed or to induce a cooperative set. That is, Ss were never informed that they were to give any blocks to their partners. They were prompted, if necessary, to get from their partners the blocks they needed. Thus, the final sample consisted of Ss who already had learned how to do the puzzles. This restriction fit the major aim of discovering how subjects went about obtaining parts from each other, rather than studying their individual abilities to put puzzles together.

Experimental Sessions. Two pairs of Ss were tested each day. The required four Ss were brought together by taxicab, accompanied by a familiar project assistant, to the Social Interaction Laboratory at the Bureau of Child Research. The two Ss who were not being studied at any given time played together with the assistant in a playroom. These two Ss could be observed from an observation room located between the playroom and experimental room. Care was taken to insure that the play activities of these Ss were constant across pairs and largely irrelevant to the activities in the testing situation.

During the experiment the Ss were seated at opposite sides of a four foot diameter table placed in the approximate center of a 13 by 15 foot room. A female experimenter (E) was seated between the Ss. The duties of the E consisted of distributing and collecting puzzle materials, rewarding the Ss appropriately, and maintaining order. She interacted with the Ss as little as possible, while

still remaining warm and permissive. Two observers (Os) observed the Ss through a one-way window from the observation room.

After the Ss had entered the room and seated themselves at the table, the E explained the nature of the task and the payoff conditions under which it was to be played. An effort was made to determine whether the Ss had understood the instructions by questioning them about the payoff conditions. The majority of the Ss appeared to understand their instructions, in the sense that they were able to verbalize the conditions under which they would be rewarded.

The E then administered the six puzzles under the first payoff condition. Next, the E explained the payoff conditions for the second set of six puzzles and again attempted to elicit verbal responses indicating comprehension of the instructions. The second set of six puzzles was then administered. Following the completion of this series, the Ss were given two additional puzzles with no time limits and were rewarded merely for completing them. The Ss' responses were not scored on these final trials. The Ss then were given a toy and taken to the playroom while the second dyad was run. The procedure for the second dyad was identical to that for the first.

Dependent Variables

The two Os recorded the content of the interaction between the Ss in the experiment, the locus of their visual orientation, and the amount of time each S took to complete each puzzle. To score the content of interaction, a system of behavorial categories was employed. These categories were established during the pretest trials and were designed to encompass all task-relevant behavior. The categories and their behavorial descriptions are outlined below.

I. DEMAND. A demand was scored whenever one S requested a puzzle piece from the other S.

A. Verbal. One S verbally requested a puzzle piece from the other S.

1. Rewarding. The demand implied approval or reward contingent upon compliance with the demand.

2. Punishing. The demand implied punishment or disapproval contingent upon the S's failure to comply.

3. Bargaining. One S offered to give the other S a piece if the other S would give him one.

4. Other. All verbal demands which are not scored as Rewarding, Punishing, or Bargaining.

B. Nonverbal. A demand employing gestures.

1. Reaching. A gesture in which the S's hands moved rapidly toward the other S, palm up, all fingers extended.

2. Pointing. The S pointed to the puzzle piece he wanted, palm down, finger extended, hand relatively steady.

II. TAKE. One S manually obtained a puzzle piece from the other S's set, without the latter's help.

III. COMPLY. One S responded to the other S's demand.

A. Verbal. One S responded verbally to the other S's demand.

1. Agreeing. The S stated he would comply with the demand of the other S.
2. Refusing. The S stated that he would not comply with the other S's demand.
3. Bargaining. The S made a bargaining demand in response to the other S's demand.

B. Nonverbal. One S responded nonverbally to the other S's demand.

1. Delivery. The S gave a piece to the other S in response to that S's demand.
2. Resistance. The S physically prevented the other S from taking a puzzle piece from him.

IV. OFFER. One S gave a piece to the other S or asked the other S if he needed a piece, without this action being preceded by a demand from the other S.

A. Verbal. One S asked the other S whether he needed a piece.

B. Nonverbal. One S gave a piece to the other S.

V. GIVE INFORMATION. One S gave the other S information about the second S's puzzle or about his own puzzle.

A. Verbal. The S gave information verbally.

B. Nonverbal. The S gave information by gesturing.

VI. REINFORCING-PUNISHING CONTINGENCIES. One S indicated approval or disapproval following the other S's behavior.

A. Verbal. The S used verbal media to communicate approval or disapproval.

1. Positive. The S indicated approval of the other S's action.
2. Negative. The S indicated disapproval of the other S's action.

B. Nonverbal. One S used nonverbal means to communicate approval or disapproval.

1. Positive. The S indicated approval of the other S's action.
2. Negative. The S indicated desapproval of the other S's action.

On each trial, one of the Os recorded behavior by speaking its code name into a dictaphone and indicating which S had produced the behavior. The content of the interaction was observed an equal number of times under each condition by each O. Usually the Os alternated trials; however, the assignment of tasks to the Os occasionally made it necessary for one O to observe two consecutive trials. Both Os simultaneously observed interaction during one trial each session in order to estimate reliability of observation.

Eye orientation (EO) was scored using a time sampling procedure. One of the Os recorded the locus of EO of one of the Ss every five seconds. The moment at which the S was to be observed was indicated by a light mounted in front of the Os, which was activated by a recycling timer. Scoring began at the time the Ss received their puzzle pieces and ended at the time the S being observed finished placing the correct pieces on his puzzle card.

The S was scored as looking in one of the four following loci: (1) at his own puzzle materials (Own); (2) at his partner or at his partner's puzzle pieces (P); (3) at the experimenter (E); or (4) at anything else (Other).

The Os recorded the locus of gaze by pressing one of four piano-type switches which were connected to electrical counters. The counter readings were recorded on the dictaphone at the end of each trial.

The EO of only one S was observed each trial. Ss were usually observed alternately on alternate trials; however, as with interaction, the assignment of tasks to Os occasionally required that one S be observed on two consecutive trials. Also, as with interaction, each S was observed an equal number of times by each O under each experimental condition. One S was observed simultaneously on one trial each session for EO reliability purposes.

The time it took each S to complete each task was recorded by the use of stopwatches. One O was assigned to one S and the other O to the other S for the duration of each session. The watches were started simultaneously by the Os when the Ss were handed their puzzle pieces. Each observer stopped timing as soon as the S whom he was observing placed his or her last piece on the puzzle.

Results

Distribution of responses across categories

Approximately 90 percent of the observed task-relevant behavior was scored in four general categories: (1) demand (other and reaching), (2) take, (3) comply (deliver), and (4) offer (nonverbal). The frequency with which behaviors were recorded in each of these categories for each social class is listed in Table 2. Statistical analyses of these four categories as dependent variables appear below. Other categories were not analyzed due to the infrequent occurrence of their referents.

Table 2 about here

Observer reliability

An index of observer reliability was calculated for each of the four behavorial categories listed above by dividing twice the number of occasions upon which the Os agreed upon the occurrence of the given behavior by the total number of times that each observed it. Indices of agreement ranged from 0.88 to 1.00, with an average of 0.95. The similarly computed average reliability index for observation of direction of gaze was 0.91.

Interaction content

The frequencies of occurrence of some of the four behavorial categories were significantly correlated with the number of total acts. To eliminate this confounding, proportion scores were derived for each category from the frequency scores of each S by dividing the frequency of occurrence of the referent behavior of a category by the total number of acts emitted by that S. The proportion scores were converted to arcsin scores to normalize their distributions. After inspection indicated that their distributions were normal, each proportion score, as well as the total number of task-relevant behaviors, was subjected to an analysis of variance. The principle source variables were social class (middle vs. lower), sex, payoff condition (cooperative vs. competitive), and order of conditions (cooperative first vs. competitive first).

Table 3 about here

The means involved in the analyses of variance appear in Table 3. The summary of each analysis is reported in Table 4. All p values refer to two-tail tests. The analysis of total task-relevant responses revealed effects of sex and of order of conditions, each beyond the .10 level of confidence, and an interaction between social class, sex, and condition order beyond the .05 level. Girls emitted more acts than did boys, and Ss who received the competitive condition first emitted more responses (across both payoff conditions) than did those who received the cooperative condition first. Multiple comparison tests of the means involved in the three-way interaction indicated that the effect was primarily due to the very high frequency of responses of lower class girls in the competition-first condition. It also should be noted that the two lower class groups differed from each other. Ss in NS-1 emitted approximately twice as many task-relevant responses as did those in NS-2 ($p < .05$). Classification of all task-relevant responses into verbal and nonverbal types revealed no social class difference in the ratio of verbal to nonverbal acts.

Table 4 about here

The analysis of demands revealed a significant main effect of order of conditions and a significant interaction between payoff condition and order of conditions, both beyond the .01 level. Ss demanded more during the first payoff condition than during the second; however, those Ss who received the competitive condition first demanded more under both competitive and cooperative payoff than did those who received the cooperative condition first. MC Ss complied with 57% of LC demands. LC Ss complied with 38% of MC demands.

The major determinant of variance in taking was social class ($p < .05$). Middle class Ss took more puzzle parts from their lower class peers than the latter took from them. Several other effects and interactions were obtained beyond the .10 level. The most significant source of these rather weak findings was the higher proportion of taking when the cooperative condition was first than when the competitive condition was first.

Social class affected offers at the .10 level. MC Ss initiated more deliveries of puzzle parts than did LC Ss. The interaction of social class with sex and order of payoff conditions, significant beyond the .01 level, was due primarily to more offering by the MC girls in the cooperative-first group than by MC girls in the competitive-first group, and by more offering by the MC males in the competitive-first group than by any other MC males.

The frequencies with which the members of each dyad emitted demands, takes, and offers, were uncorrelated, as were their numbers of total acts.

Visual Orientation

The number of times each S was scored as looking at each locus was divided by the total number of times the eye orientation (EO) of that S was recorded, in order to determine the proportion of time the Ss spent looking at each locus. The socioeconomic groups did not differ in the proportion of time allocated to each of the four loci. Ss in both groups spent about 67% of the task time looking at their own puzzle materials (Own), about 27% looking at their partners (P), and about 6% looking at the experimenter or at other stimuli (E and Other). Because of the small number of responses falling into the E and Other categories, it was felt that the P and Own percentages were confounded

(inversely related) to such an extent that analysis of only one of them would suffice. The P category was chosen for analysis. The reverse of conclusions made about P obtain for Own.

The P proportion scores were subjected to an arcsin transformation to normalize their distribution. They were then submitted to an analysis of variance with the same source variables as were employed above. This analysis, presented in Tables 5 and 6, indicates significant effects of condition order, payoff condition x condition order, and social class x payoff condition x condition order. An examination of the means of the condition order groups revealed that Ss in the competitive-first group directed approximately one and one half times as much eye orientation toward P (EO-P) as did Ss in the cooperative-first group. Also the EO-P of MC Ss decreased markedly across the two halves of the session, while that of LC Ss did so only very slightly.

Tables 5 and 6 about here

Correlation coefficients were calculated to determine whether relationships existed between the proportion of EO-P and the frequencies of the task-relevant behaviors discussed above. The total number of task-relevant behaviors emitted by Ss under all conditions was significantly related to the proportion of EO-P of these Ss ($r = .48$, $p < .01$). When the two condition order groups were examined separately, it was found that this relationship obtained for the competitive-first group ($r = .52$, $p < .02$) but not for the cooperative-first group ($r = .29$, $p < .10$). Among the specific response categories EO-P was significantly related only to the frequency of offers in the cooperative-first group ($r = .65$, $p < .01$) when the correlation between the appropriate behavior category and the total number of task-relevant acts was eliminated statistically. No relationship was found between the EO-P scores of the two members of the dyads ($r = .15$, $p < .10$).

Time Scores

The time required by the Ss to complete their puzzles was also subjected to an analysis of variance. The results of this analysis, reported in Tables 5 and 6, indicate an effect of payoff condition at the .01 level, as well as interactions between order and payoff ($p < .10$) and between sex, order, and payoff ($p < .05$). Subjects took longer, i.e., were slower, in the cooperative condition than in the competitive condition, especially when the competitive condition was first. Within the competitive-first group, girls were particularly slow in completing their puzzles under cooperative payoff. It should be noted that the times required by the two members of the dyads to complete their puzzles were significantly correlated ($r = .56$, $p < .01$), especially in the competitive condition ($r = .88$).

Puzzle-making performance

In a post hoc analysis of performance, Ss were classified into successful and unsuccessful types. Those Ss who won 75% or more of the competitive trials were considered successful; their partners were designated unsuccessful. Ten of the 19 dyads were included in this analysis. MC Ss were disproportionately represented in the successful group and LC Ss in the unsuccessful group. Although tests of significance were not performed on these groups, the means reported in Table 7 reveal some noteworthy trends. It is clear that in the MC group success was associated with speed. The successful MC Ss were over twice as fast as the unsuccessful MC Ss while successful LC Ss were actually slightly slower than were unsuccessful LC Ss. The major category of response associated with MC success was the percentage of taking, while offering also showed some advantage. Complying, and, to a lesser extend, demanding, worked against the success of MC Ss.

Table 7 about here

Within the LC group, the total frequency of task-relevant acts was most strongly associated with success, with successful Ss emitting four times as many acts as unsuccessful ones. The percentages of demands and offers were somewhat higher among the successful than the unsuccessful LC Ss.

The comparisons of successful and unsuccessful Ss were closely matched by a comparison of trials won versus trials lost in the entire MC and LC samples (see Table 8), as would be expected from the fact that most trials were won by successful Ss. MC Ss won 114 trials, while LC Ss won 61. Losses among the LC Ss were associated with few acts per trial and a low percentage of demanding. A high frequency of losses and a low frequency of task-relevant behavior were particularly common among Ss in NS-2.

Table 8 about here

Discussion

The experimental setting was designed to encourage social interaction without restricting its content. Despite this encouragement, task-relevant social behavior was minimal. The vast majority of behaviors emitted by Ss in both socioeconomic samples was concerned directly with the physical manipulation of puzzle pieces. Smiles, nods, pleases, thank yous, and other "polite" responses common to adults were conspicuously absent. The only frequently occurring response which apparently was intended to influence the behavior of the other S was the demand (about 25% of total acts). However, demands were often not complied with (especially by LC Ss), and Ss emitted proportionately fewer of them in the second half of the session.

Although the offer did not contribute to the payoff of the S making it in the competitive condition, the fact that the proportion of offers was not sensitive to the payoff condition variable argues that Ss were not using it as an attempt to influence their partners. Whether this lack of responding to the social aspects of a task situation reflects a general absence in preschool children of behaviors intended to influence others or a specific adaptation to a situation which did not demand the use of influence techniques remains to be determined.

The significant results of this experiment often tended to be found in the interaction of two or three of the variables. This fact suggests that, rather than general gross differences between middle and lower class children, investigators may expect to find differences in subgroups of these populations (e.g. age or sex) under certain conditions. The extreme range of individual differences found within both groups, as well as the general lack of differences in their social behavior suggest that the labels "middle class" and "lower class" are by themselves too gross to be of much value in predicting a child's social behavior under all circumstances.

The greater success of the MC Ss can probably be attributed to their superior ability to perform the task, rather than to any superior influence ability. MC Ss engaged in proportionately more of the most effective responses (taking and offering) and tended to be more efficient (though neither total acts nor task time showed significant main effects of social class).

The findings suggest, however, that the most effective strategy differs for the two subject populations. MC winners tended to take more and demand less than did MC losers, while the opposite was true of LC Ss. Demanding was probably a more effective strategy for LC than MC Ss, as MC Ss complied more often to demands than did LC Ss.

While the correlation between partners in the rate of performing given responses appeared to be only slight, there was a significant correlation between partners in task time. This might be due to competition, to imitation, or to the contribution of one S's responses to the completion of the other S's puzzle. Clearly, competition led to more rapid performance in both social groups than did cooperation. An unexpected finding, however, was that the first payoff condition set the pace for performance under the second payoff condition; when the competitive condition was first, Ss responded at higher rates to both payoff conditions than when the cooperative condition was first. Most surprising was the finding that the acceleration of responses by initial competitive conditions was stronger among LC girls than any other group. An interpretation is suggested later in this discussion.

The response category (proportion score) that was increased most by initial competition was demanding, while taking was greater when cooperation was first. The latter effect also was true of offering, particularly among MC girls. Accomodating behavior has been found to be characteristic of middle class women in other contexts (Vinacke and Gullickson, 1964; Rosenfeld, 1966).

Visual orientation toward the partner, like demanding and like overall responsiveness, was greater when the first task was competitive than when cooperative. Also, MC Ss reduced their amount of looking at their partners during the second payoff condition, regardless of its payoff, while LC Ss maintained their initial levels. In a previous study, Head Start and MC preschool children were compared for visual orientation while each was interacting with a middle class teacher (Horowitz and Rosenfeld, 1966) In that study the Head Start children engaged in more nonadaptive looking than did the middle class

children; that is, they looked more at the teacher and less at their task materials. In the initially competitive situation of the present study, LC Ss persisted more in looking at their partners than did MC Ss. This looking was not related to performance. However, it may have reflected greater concern with cues to interpersonal affect among the LC than MC Ss. Facial cues have been shown to be particularly good sources for inferring social feelings (Ekman, 1966; Rosenfeld, 1966).

Of course, other explanations could account for the more rapid decrease in looking at the partner by MC than LC Ss. These include more rapid satiation of task interest by the MC group, and greater unfamiliarity with the middle class testing situation among the LC group.

The general tendency of LC girls to be more generally active in the competitive atmosphere (competition-first condition) is worthy of some speculation. Perhaps the LC girls were imitating the behavior of adult females in their home environments. Maternal dominance, due to male absenteeism and other reasons, is particularly likely in lower-class Negro families. Thus, the LC girl may view the competi payoff task condition as the appropriate place to demonstrate successful dominant behavior.

Followup Study

Following completion of the main experiment, two pairs of Ss were selected for further study in the hope of determining some of the conditions under which unsuccessful LC Ss would be more effective. Pairs were chosen in which the LC Ss were among the least successful performers, had exhibited extremely low and relatively stable rates of task-relevant behavior, and had been paired with MC partners whose

rates of behaving were relatively stable and typical of the MC group. One of the Ss, here labeled LC-1, was a male Negro of age 4 years, 9 months at the beginning of the study. The other (LC-2) was a male Caucasion of age 4 years, 5 months.

These two Ss were brought a second time to the laboratory with their original MC partners, and were given the same tasks that they had performed approximately three weeks earlier in the main experiment. The payoff conditions were given in the same order as in the first session (competitive-first for LC-1, and cooperative-first for LC-2). Approximately one week later, LC-1 and LC-2 were paired together at their own nursery school. The cooperative condition was given first at this session. About one week after this pairing, LC-1 and LC-2 were again paired with their original MC partners at the laboratory, where they received the payoff conditions in their original orders.

The pairing of the two LC Ss together was an attempt to provide what was thought to be an optimal environment for their performance. On the assumption that any combination of an unfamiliar environment, an unfamiliar partner, a MC partner, and a successful partner might be detrimental to the responsiveness of the LC Ss, all of these factors were minimized. The LC Ss were tested in a familiar environment, with a familiar LC partner of apparently equally poor playing ability. In this setting, the LC Ss were expected to be most socially responsive and to perform at the upper limit of their ability.

Figure 1 about here

The results of all four sessions in terms of the total number of acts emitted by LC-1 and LC-2 are presented in Figure 1. It can be seen that both LC Ss exhibited a relatively stable, although slightly rising, rate of behavior across the two baseline sessions (Sessions 1 and 2). Their MC partners' baselines also were relatively stable. When paired with each other in Session 3, the LC Ss showed marked increases in behavioral output. In the fourth session, paired again with their original MC partners, the LC Ss returned toward their baseline rates. Across the four sessions, LC-1 emitted 2, 53, 44, and 0 responses, respectively; while LC-2 emitted 0, 5, 23, and 13 responses.

Subject LC-1 won all six of his competitive trials against LC-2. His task times averaged 28 seconds, compared to 39 seconds in the baseline sessions. Thus while his task-relevant behavior increased 1500 percent over baseline, his performance time still improved. This improvement carried over to the final session with his MC partner, even though LC-1 performed no interpersonal responses. The average competitive performance of LC-2 was slower when paired with LC-1 (34 seconds) than when paired with his MC partners (27 seconds), but his responsiveness was greater.

It is clear in each of these two case studies that the LC Ss were not incapable of performing task-relevant behavior. The degree to which they engaged in such behavior was found to be a function of their "environments". In the "lower class environment" they were highly active; in the "middle class environment" they were extremely nonresponsive. To the degree that the two LC Ss are representative of lower class children, it may be inferred that the performance capacities of lower class children are vastly

underestimated in middle class situations. The inhibiting effects of the middle class environment appear to be beyond the "culture-shock" of initial encounters that was observed in previous studies (Horowitz & Rosenfeld, 1966).

The lower class environment in the current followup study included a wide variety of variables that were likely to facilitate responsiveness. The results indicated that environment does greatly affect task-relevant behavior. The study was not designed, however, to determine which differences between the LC and MC environments were responsible for the observed differences in responsiveness. Adaptation to the task and to the research personnel could be ruled out as critical differences since these were constant across all repeated sessions, and stability of baseline behavior was demonstrated. Among the possible variables facilitating behavior in the LC situation were familiarity with the physical environment, familiarity with the peer, physical features of the peer, task relevant behavior of the peer, and task-irrelevant behavior of the peer. These alternatives should be tested by experiments in which each potential casual factor is independently varied. On the basis of the current results, the method of varying treatments across single subjects would appear to be a highly sensitive procedure for testing further hypotheses.

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Footnotes

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Table 1

Sex, Ethnic Group Membership, and Age of Ss in Each Nursery School Sample

Nursery School	Sex		Ethnic group		Mean age	Age range
	# Males	# Females	# Caucasian	# Negro	(years-months)	(years-months)
MC	10	9	18	1	4-9	4-5 to 5-3
NS-1	5	5	6	4	4-9	3-9 to 5-2
NS-2	5	4	5	4	4-11	4-5 to 5-11

Table 2

Frequencies and Percentages of Dominant Responses

in Lower and Middle Class Groups

(N=19 each)

	Middle Class		Lower Class	
	f	%	f	%
Demand				
Verbal	97	(19)	69	(17)
Nonverbal	20	(4)	23	(6)
Take	155	(31)	104	(26)
Comply	52	(10)	45	(11)
Offer	150	(30)	124	(30)
Other (Misc.)	30	(6)	42	(10)
Total	504	(100)	407	(100)

Table 3

Mean Task-Relevant Acts Per Social Class
Payoff Condition, and Order of Conditions

Payoff	Male		Female		Male		Female	
	Coop. 1st	Comp. 1st.	Coop. 1st.	Comp. 1st.	Coop. 1st	Comp. 1st	Coop. 1st	Comp. 1st
	Total Acts							
Coop.	10.4	12.2	14.8	13.8	12.6	6.2	8.6	19.3
Comp.	7.2	16.6	11.8	16.3	8.6	9.0	8.6	18.8
	Arcsin % Demands							
Coop.	0.57	0.67	0.76	1.57	0.62	1.02	0.45	1.33
Comp.	0.38	1.07	0.36	1.48	0.43	1.54	0.58	1.48
	Arcsin % Takes							
Coop.	1.66	1.21	1.22	0.35	0.95	0.63	0.66	0.67
Comp.	1.18	1.05	1.55	0.46	0.65	0.75	0.75	0.24
	Arcsin % Offers							
Coop.	0.94	1.34	1.32	0.60	0.84	0.82	0.73	0.71
Comp.	0.96	1.08	1.29	0.66	0.86	0.35	0.77	0.93

TABLE 4

Summary of Analysis of Variance of Task-Relevant Acts

Source	d.f.	F - ratio: total acts	Arcsin % Demands	Arcsin % Take	Arcsin % Offers
	1				
Social Class (A)	1	1.07	< 1	4.37**	2.87*
Sex (B)	1	3.76*	< 1	1.24	< 1
Condition Order(C)	1	4.01*	15.03***	3.18*	< 1
AxB	1	< 1	< 1	< 1	< 1
AxC	1	< 1	< 1	< 1	< 1
BxC	1	2.39	1.31	1.16	< 1
AxBxC	1	6.63**	< 1	< 1	3.16*
Error (between)	30				
	1				
Payoff Condition(D)	1	< 1	< 1	1.04	< 1
AxD	1	< 1	1.99	< 1	0
BxD	1	< 1	1.93	3.59*	1.53
CxD	1	2.42	9.06***	< 1	< 1
AxBxD	1	< 1	1.10	1.45	< 1
AxCxD	1	< 1	< 1	3.49*	< 1
BxCxD	1	< 1	2.02	3.04*	1.75
AxBxCxD	1	< 1	< 1	1.89	< 1
Error (within)	30				

*P $\leq$ .10
**P $\leq$ .05
***P $\leq$ .01

Table 5

Mean Task Time and Looking at Partner Per Social Class, Payoff Condition, and Order of Conditions

Payoff	MIDDLE CLASS				LOWER CLASS			
	Male		Female		Male		Female	
	Coop. 1st.	Comp. 1st.	Coop. 1st.	Comp. 1st.	Coop. 1st.	Comp. 1st.	Coop. 1st.	Comp. 1st.
	Looking at Partner							
Coop.	0.78	0.93	1.25	0.71	1.01	1.02	0.69	1.24
Comp.	0.62	1.33	0.80	1.35	0.55	1.16	0.88	1.41
	Task Time (Min.)							
Coop.	3.16	3.34	2.68	5.45	4.36	4.48	3.46	5.64
Comp.	2.27	2.31	2.31	2.85	2.61	3.03	2.68	2.61

Table 6

Summary of Analysis of Variance of Task Time and of Looking at Partner

Source	d.f.	F-ratio	
		Looking at Partner	Task Time
Between Ss	1		
Social Class (A)	1	<1	1.73
Sex (B)	1	<1	<1
Condition Order (C)	1	9.30***	2.82
AxB	1	<1	<1
AxC	1	1.40	<1
BxC	1	1.25	1.89
AxBxC	1	2.84	<1
Error (between)	30		
Within Ss	1		
Payoff Condition (D)	1	<1	27.21
AxD	1	<1	<1
BxD	1	<1	<1
CxD	1	9.71***	3.57*
AxBxD	1	1.59	<1
AxCxD	1	3.67*	<1
BxCxD	1	<1	4.75**
AxBxCxD	1	2.06	<1
Error (within)	30		

*P .10
**P .05
***P .01

TABLE 7

Mean Responses of "Winners" and "Losers" [a]

	MIDDLE CLASS		LOWER CLASS	
Response	Winners (N=8)	Losers (N=2)	Winners (N=2)	Losers (N=8)
Task Time (min.)	19.7	39.7	35.3	33.8
Total Acts	28	20	40	10
% Demand	18	28	40	30
% Take	40	22	24	28
% Comply	3	16	12	12
% Offer	32	22	32	22
Looking at Partner	26	19	28	21

[a] on more than 75% of competitive trials.

TABLE 8

Mean Responses in Winning and Losing Trials

	MIDDLE CLASS (N=19)		LOWER CLASS (N=19)	
Response	Winning Trials (N=114)	Losing Trials (N=61)	Winning Trials (N=61)	Losing Trials (N=114)
Acts/Trial	2.89	2.11	2.36	1.89
% Demand	23	33	41	31
% Take	38	22	23	25
% Comply	9	16	10	9
% Offer	30	29	26	34

Task-Relevant Acts of Two Lower Class (LC) Ss
Paired with Middle Class (MC) Ss and with Each Other